Air Quality Permitting
Statement of Basis

December 22, 2005

Permit to Construct No. P-040126

Cygnus, Inc., Ponderay
Facility ID No. 017-00051

Prepared by:

Almer Casile, Permit Writer
AIR QUALITY DIVISION

FINAL

Table of Contents

Acronyms, Units, and Chemical Nomenclatures

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/hr	pound per hour
MMBtu	million British thermal units
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	sulfur dioxide
T/yr	tons per year
$\mu g/m^3$	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

Cygnus is an aerospace parts manufacturer with in-house painting and surface-treatment operations. In-house painting is performed at two spray booths. Surface-treatment operations consist of cleaning, passivation (anti-corrosion treatment), Alodine™ deposition, anodizing, and sealing. Process and building heat is provided by various natural gas-fired equipment.

3. FACILITY / AREA CLASSIFICATION

The facility is classified as a synthetic minor facility because without permit limits on the potential to emit, the HAPs emissions would exceed 10/25 tons per year. The AIRS classification is "SM" because the potential to emit of HAPs is limited to less than major source levels.

The facility is located within AQCR 63 and UTM zone 11. The facility is located within Sandpoint area nonattainment area of Bonner County. The Sandpoint area is classified as moderate nonattainment for particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}). The rest of Bonner County is classified as attainment or unclassifiable for all criteria air pollutants.

The AIRS information provided in Appendix A defines the classification for each regulated air pollutant at the facility. This required information is entered into the EPA AIRS database.

4. APPLICATION SCOPE

This application has been submitted because the facility has revised HAPs and criteria air pollutant emission estimates that it had previously submitted as part of its March 12, 2002 exemption. This application addresses emissions from its natural gas fired heating equipment, process line, paint booths, and wastewater evaporator. This permitting action addresses the Sandpoint SIP's requirement that no exemptions for sources that emit PM_{10} can be issued, and includes a DEQ-developed modeling analysis which was performed for the facility.

4.1 Application Chronology

November 24, 2004	DEQ receives application
December 21, 2004	DEQ determines the application complete
January 13, 2005	DEQ receives additional information
September 19, 2005	DEQ provides draft permit to facility and Coeur d'Alene Regional Office for review

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

The facility consists of two bench-style paint booths. PM10 emissions from the booths are controlled by a filter stack, which consists of three filters arranged back-to-back. The facility also operates the following natural gas-fired equipment:

Ruud Silhouette II, rated at 150,000 Btu/hr

Ruud Silhouette II, rated at 150,000 Btu/hr

Lennox LF 3E, rated at 200,000 Btu/hr

Ruud Silhouette II, rated at 150,000 Btu/hr

Carrier 58 RAV, rated at 140,000 Btu/hr

Carrier 58 RAV, rated at 140,000 Btu/hr

(2) Power Flame CX-30, each rated at 600,000 Btu/hr

ARES Model 1200, rated at 1,200,000 Btu/hr

5.2 Emissions Inventory

The primary pollutants of concern are PM_{10} , and HAPs. A detailed emissions inventory has been included in Appendix B. A brief summary of criteria emissions are given in the following table.

Table 5.1 EMISSIONS INVENTORY

Source Description	PM_{10}		CO	VOC	NO_X	SO_2
	lb/day	T/yr	T/yr	T/yr	T/yr	T/yr
Natural Gas-Fired Equipment	0.61	0.074	0.39	0.054	0.92	0.006
Paint Booths, PB 1 & PB 2	1.27E-06	2.31E-07	NA	10.63	NA	NA

Originally, the facility requested a HAP PTE that was 19 times the 2003 emission rate in order to achieve maximum operational flexibility. This requested PTE exceeded m-xylene diamine, nitric acid, and sulfuric acid EL values, and the facility was informed that a modeling analysis would be necessary to determine compliance with appropriate AAC and AACC values. DEQ determined that an annual paint HAP content of 12.48 tons per year would assure compliance with the ELs. DEQ determined the HAP content value at the request of the facility. The annual HAP content of paints is based 2.25 times the 2003 average hourly HAP emission rate multiplied by 8760 hours per year of operation. HAP content of acids used at the facility were not limited because the limiting, and also the majority of, pollutants were the HAPs found in the paints used at the facility.

Emission estimates of hexavalent chromium were also performed at 2.25 times the 2003 emission estimates. Without the control of the filter stacks on the Paint Booths, PB 1 & 2, emissions of hexavalent chromium exceed the hexavalent chromium EL. Controlled hexavalent emissions are below the EL when a filter stack with 99.99% paint arrest efficiency is in place when the process is in operation.

5.3 Modeling

The facility has demonstrated to the satisfaction of DEQ that criteria air pollutant emissions will not cause or contribute to a violation of any applicable ambient air quality standard. No TAP emissions were modeled because hexavalent chromium, m-xylene diamine, nitric acid, and sulfuric acid emissions did not exceed EL values. The facility's modeling analysis and DEQ modeling memorandum are presented as Appendix C of this statement of basis.

Table 5.2 SUMMARY OF SIGNIFICANT IMPACT ANALYSIS RESULTS

Pollutant	Averaging Period	Ambient Concentration ($\mu g/m^3$)	Significant Contribution Levels ($\mu g/m^3$)	Exceeds the SCL (Y or N)
PM_{10}	24-hour	2.57	5	N
	Annual	0.75	1	N

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201 ..... Permit to Construct Required

The facility's proposed construction does not meet the permit to construct exemption criteria contained in Sections 220 through 223 of the Rules. Therefore, a PTC is required.

IDAPA 58.01.01.203 ..... Permit Requirements for New and Modified Stationary Sources

The applicant has shown to the satisfaction of DEQ that its Ponderay facility will comply with all applicable emissions standards, ambient air quality standards, and toxic increments.

IDAPA 58.01.01.205 ..... Permit Requirements for New Major Facilities or Major Modifications in Attainment or Unclassifiable Areas

The proposed new facility is not a designated facility as defined by IDAPA 58.01.01.006.27. The proposed new facility does not emit or have the potential to emit a regulated criteria air pollutant in excess of 250 T/yr; therefore, PSD major source permitting requirements do not apply.

IDAPA 58.01.01.210 ..... Demonstration of Preconstruction Compliance with Toxic Standards

The applicant has demonstrated preconstruction compliance for all TAPs identified in the permit application.

IDAPA 58.01.01.224 ..... Permit to Construct Application Fee

The applicant satisfied the PTC application fee requirement by submitting a fee of $1,000.00 at the time the original application was submitted, November 24, 2004.

IDAPA 58.01.01.225 ..... Permit to Construct Processing Fee

The total emissions from the proposed new facility are between 10 and 100 T/yr; therefore, the associated processing fee is $5,000.00, which was paid on December 8, 2005.

40 CFR 60 ..... New Source Performance Standards

The proposed new facility is not subject to any NSPS requirements.

5.5 *Fee Review*

The PTC application fee was received on November 24, 2004. In accordance with IDAPA 58.01.01.225, a permit to construct processing fee of $5,000 was received on December 8, 2005.

Table 5.3 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	0.92	0	0.92
SO_2	0.006	0	0.006
CO	0.39	0	0.39
PM_{10}	0.074	0	0.074
VOC	10.68	0	10.68
TAPS/HAPS	12.48	0	12.48
Total:	0.0	0	**24.55**
Fee Due	**$ 5,000.00**		

5.6 *Regional Review of Draft Permit*

A draft copy of the permit was provided to the Coeur d'Alene regional office on September 19, 2005. Comments were received and processed as requested.

5.7 *Facility Review of Draft Permit*

A draft copy of the permit was provided to the facility September 19, 2005.

6. PERMIT CONDITIONS

This section describes new permit conditions that have been included in the permit as a result of this permit action.

6.1 Permit Condition 2.3 contains the visible emission requirements for the coating process.

6.2 Permit Conditions 2.4, 2.5, 2.6, 2.7, 2.11 and General Provision 2 establish the operating, monitoring, and recordkeeping requirements for the control equipment necessary to demonstrate compliance with opacity limit of Permit Condition 2.3 and the HAP content limit of Permit Condition 2.8.

6.3 Permit Conditions 2.4, 2.5, 2.6, 2.7, 2.11 and 2.12 establish the operating, monitoring, and recordkeeping requirements necessary to assure that the facility does not exceed HAP content limit of Permit Condition 2.8 which has been established to assure the facility remain below the EL values of IDAPA 58.01.01.585 and 586.

6.4 Permit Condition 2.8 limits total HAPs content of paints and coatings. This limit assures that all TAP increments are complied with, and the facility is a HAP minor source. No VOC limits have been included in the permit because no regulatory requirement necessitates it.

6.5 Permit Conditions 2.9 through 2.14 establish the monitoring and recordkeeping requirements necessary to demonstrate compliance with the HAP content limit of Permit Condition 2.8.

6.6 Permit Condition 3.3 contains the visible emission requirements for the natural gas-fired equipment. Permit Condition 3.6 requires facility to use only natural gas in the equipment listed in Table 3.1 of the permit, and has been established to assure compliance with the visible emission requirement contained in Permit Condition 3.3.

6.7 Permit Condition 3.4 contains the grain loading requirements for the natural gas-fired equipment. Permit Condition 3.6 requires facility to use only natural gas in the equipment listed in Table 3.1 of the permit, and has been established to assure compliance with the grain loading requirement contained in Permit Condition 3.4.

6.8 Permit Conditions 3.5, 3.6, and 3.7 establish the operating, monitoring and recordkeeping requirements to be used to demonstrate that PM_{10} emissions will not contribute to a violation of PM_{10} NAAQS as required Sandpoint PM_{10} SIP.

7. PUBLIC COMMENT

An opportunity for public comment period on the PTC application was provided in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and no requests for a public comment period on DEQ's proposed action.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommends that Cygnus, Inc. be issued a final PTC No. P-040126 for the Ponderay facility. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

AC/sd Permit No. P-040125

G:\Air Quality\Stationary Source\SS Ltd\PTC\Cygnus\Final\P-040126 SB.doc

Appendix A

AIRS Information

P-040126

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Facility Name: Cygnus, Inc.,
Facility Location: Ponderay
AIRS Number: 017-00051

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	B						B	U
NO_x	B						B	U
CO	B						B	U
PM_{10}	B						B	N
PT (Particulate)	B						B	U
VOC	B						B	U
THAP (Total HAPs)	B SM						B	U
			APPLICABLE SUBPART					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, **or** each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

Appendix B

Emissions Inventory

P-040126

NEW PAINTS SINCE 2001

HAPs per paint (lbs/yr)																																	
DMS 2143 DN 9374	BMS 10-11	DMS 1786	MMS 436 425 HT	Discontinued DMS 2433 EPOX 36231	DMS 2433 DN 9710	DMS 2104	DMS 2144	DMS 1850	MMS 423/425	MIL-P-23377	DMS 2433 DN 7507	36375 POLY	17925 POLY	DPM 5948-7469	DPM 5949-9708	36320 POLY	Discontinued 37038 POLY (old)	DMS 2433 DN 7803 37038 EPOXY	Discontinued 44 GN24	DPM 5893	BAC 5710 Type 60	M P 85285 37038 POLY (new)	DMS 2115 DN 9907	M P 85285 36231	M P 85285 27925	37825 Anti chafe	M P 22750 36231	M P 22750 37038 Epoxy	DPM 5066 DN 3635	Total per HAP Lbs/yr)	Total per hour (lb/hr)
39.27	0.00	39.56	3.20	0.00	0.00	0.00	37.65	31.54	0.00	0.00	0.00	0.20	21.28	0.00	0.00	0.74	0.00	0.00	0.00	0.00	0.00	0.36	0.00	0.19	2.42	0.00	0.00	0.00	3.01	179.42	0.086261
67.12	0.00	0.00	4.00	0.00	0.00	1.73	0.00	0.00	0.00	0.72	0.00	7.93	21.28	0.00	0.00	18.45	0.00	0.00	0.00	0.00	0.00	14.60	5.21	7.79	0.00	24.16	0.00	0.53	1.11	174.61	0.083948
44.64	15.94	593.40	8.25	0.00	2.89	0.00	37.65	15.78	0.00	0.72	23.75	6.34	0.00	0.00	0.00	14.76	0.00	2.47	0.00	0.00	13.74	11.68	0.00	6.23	0.00	0.00	0.38	0.53	0.00	799.13	0.384197
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.79	0.00	0.00	0.00	2.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78	0.00	0.00	0.00	0.00	0.33	4.86	0.002335
0.00	14.94	59.34	0.00	0.00	1.73	0.00	0.00	0.00	0.00	0.48	9.50	0.00	4.26	0.00	0.00	0.00	0.00	1.65	0.00	0.00	0.00	0.00	0.83	0.00	0.00	3.72	0.75	1.76	0.00	98.96	0.047579
0.00	2.39	0.00	0.00	0.00	0.00	0.00	11.30	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.68	0.008501
0.00	5.98	79.12	0.00	0.00	4.33	2.30	0.00	3.95	0.00	1.08	15.83	0.00	21.28	0.00	0.00	0.00	0.00	2.47	0.00	0.00	3.43	0.00	0.00	0.00	2.19	3.72	0.63	0.88	0.00	147.20	0.070769
0.00	2.39	23.74	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	1.98	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.42	0.00	0.00	0.00	0.16	0.22	0.00	29.36	0.014113
0.00	8.96	158.24	4.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	172.00	0.082691
0.00	0.00	23.74	0.00	0.00	2.89	0.00	7.53	0.00	0.00	0.00	15.83	0.00	0.00	0.00	0.00	0.00	0.00	1.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.44	0.00	52.39	0.025186
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.95	0.0019
0.00	0.00	59.34	6.39	0.00	2.89	2.27	84.72	3.95	0.00	0.48	39.59	0.00	0.00	0.00	0.00	0.00	0.00	1.65	0.00	0.00	0.76	0.00	0.00	0.00	0.02	0.00	0.63	0.00	0.00	202.69	0.097446
0.00	0.00	0.00	0.00	0.00	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	2.20	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.31	0.44	0.00	6.28	0.003018
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.000276
0.00	0.00	0.00	0.00	0.00	0.00	0.00	84.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	84.72	0.04073
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	31.54	0.00	0.00	0.00	0.00	4.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.13	0.00	0.00	0.00	0.00	36.93	0.017753
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	255.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	255.13	0.122657
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.27	0.018397
3.36	0.00	0.00	0.40	0.00	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	4.26	0.80	2.94	0.74	0.00	0.99	0.00	0.00	0.00	0.36	0.00	0.19	0.00	1.86	0.38	0.53	0.00	18.73	0.009004
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	4.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.61	0.002696
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	0.000225
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93	0.000449
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.000217
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.08	4.01E-05
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.06	0.00	0.00	0.00	0.00	0.07	3.51E-05
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.07	0.00	0.11	5.44E-05
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78	0.00	7.43	0.00	0.00	0.00	8.21	0.003948
1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	1.14	0.000546
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.21	0.026542
0.00	2.65	14.15	0.41	0.00	0.00	1.76	14.42	4.03	65.22	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	104.86	0.050415
0.00	0.00	13.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.18	0.006337
0.00	0.00	1.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.91	0.000921
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.10	0.001008
0.00	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80	0.000383
155.49	54.04	1085.71	27.43	0.00	18.18	8.76	278.00	149.97	360.69	5.05	106.5	15.46	76.61	2.90	10.65	37.63	0.00	12.19	0.00	0.00	23.05	27.00	6.57	15.96	5.84	40.88	3.60	5.40	4.48		

Total HAPS (lbs/yr): 2518.00 1.210579

Total HAPS @ 2003 usage (tons/yr): 1.26

Total HAPS @ Avg. Hourly 2003 X 8760 hr/yr ÷ 2000 lb/ton (tons/yr): 11.93026

ın obtained from Manufacturer MSDSs.

ıt

Cygnus Filename: Emissions Calcs_2003_AsIfCtrl'd.xls

Air Quality Emissions Summary

Year 2003 Data Calculated at Method 319 Filter Stack Efficacy 2.25

Pollutant	Avg 2003 emission rate, based on 2080 hrs of operation (lb/hr)	Idaho Screening EL (lb/hr)	Difference between PTE vs. Idaho Screening EL (lb/hr)	% of Idaho Screening EL (lb/hr)	Requested Emission Limits (2.25X 2003 Levels) (lb/hr)	% of Idaho Screening EL (lb/hr)	Emission Estimate (2.25X 2003 Levels X 8760hr/yr) (T/yr)		
n-Butyl Acetate	0.086260966	47.3	-47.21374	0.18%	0.194087174	0%	0.85		
Methyl Amyl Ketone	0.08394838	15.7	-15.61605	0.53%	0.188883856	1%	0.83		
Methyl Ethyl Ketone	0.384196541	39.3	-38.91580	0.98%	0.864442216	2%	3.79		
1-Methoxy 2-Propanol Acetate	0.002334928	24	-23.99767	0.01%	0.005253588	0%	0.02		
Xylene	0.047578504	29	-28.95242	0.16%	0.107051634	0%	0.47		
Cyclohexanone	0.008501394	6.67	-6.66150	0.13%	0.019128137	0%	0.08		
Methyl Isobutyl Ketone	0.070768679	13.7	-13.62923	0.52%	0.159229527	1%	0.70		
Ethyl Benzene	0.014113479	29	-28.98589	0.05%	0.031756327	0%	0.14		
Isopropanol	0.082691346	65.3	-65.21731	0.13%	0.186055529	0%	0.81		
n-Butyl Alcohol (n-Butanol)	0.025186188	10	-9.97481	0.25%	0.056668924	1%	0.25		
sec-Hexyl Acetate	0.001899946	20	-19.99810	0.01%	0.004274879	0%	0.02		
Toluene	0.097445529	25	-24.90255	0.39%	0.21925244	1%	0.96		
2-Butoxyethanol	0.003018112	8	-7.99698	0.04%	0.006790751	0%	0.03		
4-tert Butylphenol	0	20	-20.00000	0.00%	0	0%	0.00		
m-Xylene Diamine	0.000276442	7.00E-04	-0.00042	39.49%	0.000621995	89%	0.00	6.47E-04	
1-propanol (n-Propanol)	0.040730409	33.3	-33.25927	0.12%	0.091643419	0%	0.40		
Methyl n-Propyl ketone	0.017752746	46.7	-46.68225	0.04%	0.039943679	0%	0.17		
sec-Butyl Alcohol (Isobutanol)	0.122657285	20.3	-20.17734	0.60%	0.27597889	1%	1.21		
Nitroethane	0.018396969	20.7	-20.68160	0.09%	0.041393181	0%	0.18		
Naptha (all)	0.009004156	3.33	-3.32100	0.27%	0.02025935	1%	0.09		
Diacetone Alcohol	0.002695962	16	-15.99730	0.02%	0.006065913	0%	0.03		
Ethylacetate	0	93.3	-93.30000	0.00%	0	0%	0.00		
Ethylene Glycol	0.000449327	0.846	-0.84555	0.05%	0.001010986	0%	0.00		
Allyl Glycidylether	0.000217067	1.47	-1.46978	0.01%	0.000488401	0%	0.00		
Propylene Glycol Methyl Ether	0	24	-24.00000	0.00%	0	0%	0.00		
Ammonia (Proc. Room)	0.000309471	1.2	-1.19969	0.03%	0.00069631	0%	0.00		
Nitric Acid (Proc. Room)	0.050829763	0.333	-0.28217	15.26%	0.114366967	34%	0.50	1.19E-01	
Fluorides (Proc. Room)	0.000169615	0.167	-0.16683	0.10%	0.000381635	0%	0.00	Filename: Emissions Calcs_2003_AsIfCtrl'd.xls	
Zirconium Compounds (Proc. Room)	0.000169615	0.333	-0.33283	0.05%	0.000381635	0%	0.00		
Sulfuric Acid (Proc. Room)	0.00428571	0.067	-0.06271	6.40%	0.00964284	14%	0.04		
Dipropylene Glycol, Monomethyl Ether	4.01106E-05	40	-39.99996	0.00%	9.02488E-05	0%	0.00		
Trimethyl Benzene Isomers	3.50798E-05	8.2	-8.19996	0.00%	7.89296E-05	0%	0.00		
*Piperazine**	5.44235E-05	0.333	-0.33295	0.02%	0.000122453	0%	0.00		
Diisobutyl Ketone	0.003948029	9.67	-9.66605	0.04%	0.008883065	0%	0.04		
2-Methoxy Ethyl Acetate	0	1.6	-1.60000	0.00%	0	0%	0.00		
Hexamethylene Diisocyanate	0.000545848	0.002	-0.00145	27.29%	0.001228157	61%	5.38E-03		
Methylenediphenyl Diisocyanate	0.026542362	0.003	0.02354	885%	0.059720313	1991%	2.62E-01		
Strontium Chromate (as Hexavalent Cr)	0.050415069	5.60E-07	0.05041	9002691%	0.113433906	20256055%	4.97E-01		
Calcium Chromate (as Hexavalent Cr)	0.006337208	5.60E-07	0.00634	1131644%	0.014258717	2546200%	6.25E-02		
Lead Chromate (as Hexavalent Cr)	0.000920531	5.60E-07	0.00092	164380%	0.002071194	369856%	9.07E-03		
Barium Chromate (as Hexavalent Cr)	0.001008242	5.60E-07	0.00101	180043%	0.002268545	405097%	9.94E-03		
Cadmium	0.000383077	3.70E-06	0.00038	10353%	0.000861923	23295%	3.78E-03		
	1.266116508								

* Shown as the hydrochloride salt in List 585

Substances above in italics were not present in the 2001 inventory

The Other Tabs Provide Actual 2003 Data

RECALCULATED, YR 2003 DATA w/ Method 319 Efficacy
(Assuming 0.00004% of paint mist not arrested and
2.25X 2003 Levels)
(note that diisocyantes are calculated
so as to not allow for any polymerization)

% of Idaho EL	PTE lb./hr.	PTE lb/yr	PTE T/yr
0.00%	4.91E-10	1.02E-06	2.16E-09
0.00%	2.39E-08	4.96873E-05	1.06E-07
8.10%	4.54E-08	9.4377E-05	1.99E-07
1.02%	5.70E-09	1.18633E-05	2.50E-08
0.15%	8.26E-10	1.72323E-06	3.63E-09
0.16%	9.07E-10	1.88743E-06	3.97E-09
0.01%	3.46E-10	7.1712E-07	1.51E-09
Subtotal PTE Hexavalent Chromium C	5.26E-08	1.61E-04	2.31E-07
9.43% = Sum of Hex Cr, % of Idaho Screening Limit			
Grand Total PTE			

Emission Estimate Calculations per AP-42, Vol. 1, CH 1.4 Natural Gas Combustion At Maximum Rated Capacity.

						Total	
				lbs./hr	lbs./day	lbs./year	ton/year
CO, residential furnaces uncontrolled:	emission factor	unit					
SO2:							
PM, Total:	40	lbs./MMscf	= **CO:**	0.13	3.20	783.22	0.39
NOx, residential furnaces uncontrolled:	0.6	lbs./MMscf	= **SO2:**	0.002	0.048	11.75	0.006
VOC:	7.6	lbs./MMscf	= **PM, Total:**	0.025	0.61	148.81	0.074
	94	lbs./MMscf	= **NOx:**	0.31	7.51	1840.56	0.92
	5.5	lbs./MMscf	= **VOC:**	0.018	0.44	107.69	0.054

19580.4 MMBtu/yr
195804 Therm

Appendix C

Modeling Review

P-040126

MEMORANDUM

DATE: July 27, 2005

TO: Almer Casile, Air Quality Division

THROUGH: Kevin Schilling, Stationary Source Modeling Coordinator, Air Quality Division KS

FROM: Dustin Holloway, Modeling Analyst, Air Quality Division DH

PROJECT NUMBER: P-040126

SUBJECT: Modeling Review for the Cygnus facility in Ponderay, Facility ID No. 017-00051

1.0 SUMMARY

Cygnus, Inc. (Cygnus) operates an aerospace parts manufacturing facility in Ponderay. The emissions from this facility are less than modeling thresholds, however, the facility is located within the Sandpoint PM_{10} nonattainment area. New facilities within the Sandpoint nonattainment area are required to model all PM_{10} emissions sources. Emissions of all other pollutants from the Cygnus facility are less than any applicable modeling thresholds. DEQ conducted a modeling analysis of the Cygnus facility to determine the ambient concentrations. The following table summarizes the key assumptions used in the modeling analysis which should be considered during permit development.

Table 1.1 KEY ASSUMPTIONS USED IN MODELING ANALYSIS

Assumption	Explanation
Both paint booth stacks will be equipped with 99.95% efficient or better filters.	The paint booth emissions were insignificant when controlled by the proposed Chemco Mach III filter. Without this filter the PM_{10} emissions need to be modeled to assure that ambient impacts are within acceptable levels.
The combustion units at this facility will only operate for 5,880 hr/yr.	This assumption was used in the analysis to demonstrate that the PM_{10} emissions from this facility would not exceed the annual significant impact level (1.0 $\mu g/m^3$)

Based on the results of DEQ's analyses, DEQ has determined that the modeling analysis: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) appropriately adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations at all receptor locations, when appropriately combined with background concentrations, were below stated air quality standards.

2.0 BACKGROUND INFORMATION

2.1 Applicable Air Quality Impact Limits

Cygnus is located in Ponderay, in Bonner county. This area is a nonattainment area for PM_{10}. Table 2.1 provides significant contribution levels (SCL) for PM_{10}. The SCLs are the maximum allowable PM_{10} concentrations within the Sandpoint nonattainment area.

Table 2.1 APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Contribution Levels ($\mu g/m^3$)[a, b]	Modeled Value Used[c]
PM_{10}[d]	Annual	1	Maximum 1st highest[e]
	24-hour	5	

[a] IDAPA 58.01.01.006.91
[b] Micrograms per cubic meter
[c] The maximum 1st highest modeled value is always used for significant impact analysis and for all toxic air pollutants.
[d] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[e] Concentration at any modeled receptor.

2.2 Background Concentrations

Background concentration data is not required for this analysis because the emissions are not allowed to exceed the SCLs.

3.0 ASSESSMENT OF MODELING ANALYSIS

3.1 Modeling Methodology

DEQ modeled the PM_{10} emissions from the Cygnus facility to demonstrate that the facility's emissions would not significantly contribute to a violation of the PM_{10} national ambient air quality standards. There are no significant fugitive emission sources at this facility. All roads and parking lots at the facility are paved and all operations are contained within a building. The following table summarizes the modeling parameters used in the analysis and DEQ's justification for those parameters.

Table 3.1 MODELING PARAMETERS

Parameter	Description	Justification
Model Selection	ISCPRIME	ISCPRIME is appropriate for this facility because model receptors are located within building downwash recirculation cavities.
Meteorological Data	1987-1991 Spokane meteorological data	This is the most representative meteorological data available for this area. Meteorological data has been collected for the Sandpoint area. However, those data are not currently available in a format usable in dispersion models.
Model Options	Regulatory default	Regulatory default options are recommended for this type of analysis.
Land Use	Rural	This facility is located in an area with a population density less than the EPA criteria of 750 people per square kilometer for urban dispersion coefficients. Therefore, rural coefficients were used.
Terrain	Terrain effects were calculated	Receptor elevations were included and the model was run to account for the effects of both simple and complex terrain.
Building Downwash	Calculated with the PRIME algorithm	The PRIME algorithm calculates concentrations in both building wake and building recirculation cavities.
Receptor Network	25 meter spacing along the fenceline and out to 300 meters; 50 meter spacing out to 600 meters; 100 meter spacing out to 1,200 meters; 200 meter spacing out to 2,000 meters.	This receptor network is sufficient to reasonably resolve the maximum modeled concentrations.
Facility Layout	Developed from submitted facility plot plan	The facility layout was developed based on a scaled building plan, and facility layout submitted by the applicant. The building is a two-level building. The higher section is a pitched roof. The building was represented in the model as a 30.5 foot tall building. This is the mean height of the pitched section of the building. All stack's were input with their actual release parameters.

3.2 Emission Rates

The emissions rates used in the modeling analysis are the maximum hourly rates submitted by the applicant. The paint booth PM_{10} emissions, when controlled with the filters described in the application, are insignificant. The following table summarizes the emissions rates used in the modeling analysis.

Table 3.2 EMISSION RATES

Stack ID	Source Description	PM_{10} Emission Rate (lb/hr)
1	Roude Silhouette II Stack	0.0012
2	Roude Silhouette II Stack	0.0012
3	Lennox LF 3E Stack	0.0016
4	Roude Silhouette II Stack	0.0012
5	Carrier 58 RAV Stack	0.00112
6	Carrier 58 RAV Stack	0.00112
7	Power Flame CX-30 Stack[a]	0.0089
MUA	Make-up Air Unit	0.0089
[a] Both Power Flame units exhaust through the same stack		

3.3 Emission Release Parameters

The following table summarizes the emission release parameters of the stacks at the Cygnus facility.

Table 3.3 RELEASE PARAMETERS

Stack ID	Easting (m)	Northing (m)	Elevation (m)	Stack Height (ft)	Exhaust Temperature (°F)	Exit Velocity (m/s)[a]	Stack Diameter (ft)
1	534,186.9	5,349,663.2	647.1	30.5	68	0.001	0.5
2	534,170.6	5,349,638.8	647.1	30.5	68	0.001	0.5
3	534,173.1	5,349,637.5	647.1	16.1	68	0.001	0.67
4	534,181.7	5,349,647.5	647.1	16.1	68	0.001	0.5
5	534,196.1	5,349,666.7	647.1	16.1	68	0.001	0.5
6	534,203.5	5,349,658.4	647.1	16.1	68	0.001	0.5
7	534,199.1	5,349,634.4	647.1	24	161	7.3	0.67
MUA	534,180.0	5,349,638.5	647.1	16.1	68	0.001	1
[a] Sources with exit velocities of 0.001 m/s have a rain cap or horizontal release.							

3.4 Results

The results of the modeling analysis demonstrate, to DEQ's satisfaction, that the emissions from this facility will not significantly contribute to a violation of any ambient air quality standard. This facility meets the dispersion modeling requirements to operate within the Sandpoint nonattainment area.

Table 3.4 SIGNIFICANT IMPACT ANALYSIS RESULTS

Pollutant	Averaging Period	Ambient Concentration ($\mu g/m^3$)	Significant Contribution Levels ($\mu g/m^3$)	Exceeds the SCL (Y or N)
PM_{10}	24-hour	4.09	5	N
	Annual	0.73	1	N